

WHAT IS CLAIMED IS:

1. A method for manufacturing an object mask which is used in an electron beam proximity exposure apparatus comprising an electron beam source which emits a collimated electron beam, the object mask having an aperture which is arranged on a path of the electron beam, and a stage which holds and moves an object, wherein the object mask is arranged in proximity to a surface of the object and a pattern corresponding to the aperture of the object mask is exposed on the surface of the object with the electron beam having passed through the aperture, the method comprising the steps of:

manufacturing a master mask having an aperture of a pattern identical with the object mask; and

manufacturing a child mask by exposing an aperture pattern identical with the master mask by using the master mask in an electron beam proximity exposure method, wherein the child mask is used as the object mask.

2. The method as defined in claim 1, wherein:

the master mask is exposed from a side facing the child mask;

the child mask is exposed from a side facing the object; and

a pattern exposed on the master mask is a pattern non-reversed from a pattern on the object.

3. The method as defined in claim 1, further comprising at least one step of manufacturing a further child mask by using the child mask as the master mask in the electron beam proximity exposure method.

4. The method as defined in claim 3, wherein:

the master mask is exposed from a side facing the child mask;

the child mask is exposed from a side facing one of the object and the further child mask; and

a number of the steps of manufacturing the child mask is  $n$  times, a pattern exposed on the master mask is a pattern right and left reversed from a pattern on the object when  $n+1$  is an odd number, and the pattern exposed on the master mask is a pattern non-reversed from the

pattern on the object when  $n+1$  is an even number.

5. The method as defined in claim 1, wherein:

distortion of the master mask with respect to a desired pattern is determined after the manufacturing thereof; and

when an exposure is performed using the master mask, an application direction of the electron beam is changed so as to correct the determined distortion.

6. The method as defined in claim 5, wherein when the child mask is exposed using the master mask, the application direction of the electron beam is changed so as to correct the determined distortion as well as distortion estimated to be produced on the child mask.

7. The method as defined in claim 6, wherein:

the master mask and the child mask are made from the same material and have the same shape;

the distortion estimated to be produced on the child mask is equivalent to the distortion determined on the master mask; and

when the child mask is exposed using the master mask, the application direction of the electron beam is changed so as to correct a double amount of the determined distortion of the master mask.

8. A mask manufactured in accordance with the method of claim 1.

9. A mask manufactured in accordance with the method of claim 2.

10. A mask manufactured in accordance with the method of claim 3.

11. A mask manufactured in accordance with the method of claim 4.

12. A mask manufactured in accordance with the method of claim 5.

13. A mask manufactured in accordance with the method of claim 6.

14. A mask manufactured in accordance with the method of claim 7.

14. A mask manufactured in accordance with the method of claim 7.